interventional and 24-week observational study. Treatment costs were derived from drug retail prices in Chinese market. Diabetes management and complication costs were obtained from Chinese published data. Projections were made from a societal perspective for 30 years, with costs and life years discounted at 3% annually. One-way sensitivity analysis was performed. **RESULTS:** Switching to IAsp from HI was projected to increase life expectancy by 0.48 year (14.11 vs. 13.63) and QALY by 0.96 QALY per patient (9.83 vs. 8.87), due to reduced incidences of diabetes-related complications. IAsp was associated with reduced total direct medical costs by CNY (Chinese Yuan) 108,464 (204,853 vs. 313,317), due to reduced complication costs by CNY 129,778 (107,084 vs. 236,862) and increased treatment and management costs of CNY (Chinese Yuan) 20,128 (57,391 vs. 37,263) and 1,186 (40,378 vs. 39,192) respectively. Sensitivity analyses demonstrated robustness of the results. **CONCLUSIONS:** Switching to IAsp from HI for Chinese patients with T2DM on a basal-bolus regimen was not only associated with improvements in life expectancy and QALYs, but also significant reduction in total direct medical costs. Switching to IAsp from HI on a basal-bolus regimen is a cost-saving treatment strategy for T2DM patients in a Chinese setting.

PDB51

VALIDATION OF THE UKPDS OUTCOMES EQUATIONS USING THE CARDIFF TYPE-2 DIABETES MODEL

McEwan P

HEOR Consulting, Monmouth, UK

OBJECTIVES: The Cardiff Type-2 Diabetes Model is a fixed time increment stochastic simulation model written in Microsoft Excel and C++; initially developed in 2003, it has been used to support a number of cost-effectiveness and public health policy decisions. The model is fundamentally built around the risk equations reported from the United Kingdom Prospective Diabetes Study (UKPDS) and concerns persist regarding the validity of these equations in contemporary populations. Therefore, the objective of this study was to validate the model's output to recently published outcomes trials to establish if the UKPDS equations remain credible. **METHODS:** Simulated cohorts reflecting the baseline characteristics associated with key outcomes studies (ASPEN, ADVANCE, ACCORD, VADT, ADDITION, ASCOT, CARDS and long term follow-up of UKPDS) were generated and treatment effects applied to reflect intensive versus conventional arms. Predicted and observed events, over a time horizon consistent with each trial, were compared and goodness of fit determined, using the coefficient of determination (R^2). **RESULTS:** Across all validation studies predicted versus observed events resulted in an R^2 statistic of 0.90. This result was obtained when including data from UKPDS, for which the model gave an exceptionally fit (R^2 = 0.95) When excluding UKPDS the overall R^2 = 0.7. Despite the less accurate fit, there was a consistent trend demonstrated from the model although a noteworthy lack of fit was observed for the ACCORD blood pressure trial (non-fatal myocardial infarctions [MI]) and ACCORD glucose lowering trial (non- fatal MI and congestive heart failure) in which the predicted events rates by the model were substantially lower than reported in the trials. Similarly, for the ADVANCE trial, non-fatal strokes were significantly under-predicted by the model. **CONCLUSIONS:** This study suggests the UKPDS risk equations within type-2 diabetes models remain credible for supporting contemporary technology assessment and health policy decisions.

PDB52

INSULIN GLARGINE IS COST-EFFECTIVE IN TREATMENT OF PATIENTS WITH DIABETES TYPE-2 IN WHOM NPH INSULIN DOES NOT PROVIDE ADEQUATE GLYCAEMIC CONTROL – THE CASE OF POLAND

Szmurlo D[1], Kostrzewska K[1], Fundament T[1], Kopec G[1], Wojtarowicz M[1], Drzal R[1], *Stawujak G[1], Labak-Klimasara M[2], Glasek M[2], Lis J[2],* Plisko R[1]

[1]*HTA Consulting, Krakow, Poland,* [2]*Sanofi, Warsaw, Poland*

OBJECTIVES: Long-acting insulin analogues are currently not reimbursed in diabetes type-2 in Poland. The population who could benefit most from its reimbursement are patients whose glycaemic control cannot be maintained using protamine Hagedorn insulin (NPH). The aim of the analysis was to assess cost-effectiveness of insulin glargine (IGlar) as compared to NPH in treatment of such subpopulation. **METHODS:** Cost-utility analysis in lifetime horizon was conducted using widely validated CORE Diabetes Model. This is a commonly used Markov model which simulates the progression of physiological parameters and incidence of diabetes-related complications over time. The analysis was based on systematic literature review of clinical trials. Due to lack of data from RCTs for the subpopulation defined as lack of NPH efficacy, the data source were non-randomized clinical trials. These are so far the best available evidence. Based on the identified studies two comparisons were made: IGlar versus NPH, both in combination with oral antidiabetic drugs (OAD) or with OAD / bolus insulin. The following efficacy parameters were taken into account: change in HbA1c, BMI, hypoglycemia rate. Costs were estimated from public payer's (National Health Fund, NHF), and NHF+patients' perspective. Costs, quality-adjusted life years (QALYs) and incremental cost-utility ratios (ICURs) were estimated as a result of modeling. Annual discount rates of 5% and 3.5% were applied on costs and health effects, respectively. The acceptability threshold was set at 25,800 EUR/QALY. **RESULTS:** The difference in QALY was 0.792 for IGlar+OAD vs NPH+OAD and 0.695 for IGlar+OAD/bolus versus NPH+OAD/bolus. From NHF+patients' perspective the difference in costs was 1592 EUR and 1355 EUR, respectively. ICURs were 2010 EUR and 1950 EUR, respectively. Results from NHF perspective were similar – ICURs did not exceed 2000 EUR. **CONCLUSIONS:** In Polish setting insulin glargine is highly cost-effective in patients in whom NPH insulin does not provide adequate glycaemic control.

PDB53

DRIVERS OF COST-EFFECTIVENESS IN TYPE-2 DIABETES MELLITUS

McEwan P[1], Foos V[2], Grant D[3], Lamotte M[4], Palmer JL[5], Lloyd A[3]

[1]*Swansea University, Cardiff, UK,* [2]*IMS Health, Basel, Switzerland,* [3]*IMS Health, London, UK,* [4]*IMS Health, Vilvoorde, Belgium,* [5]*IMS Health, Allschwil, Basel-Landschaft, Switzerland*

OBJECTIVES: Type-2 diabetes mellitus (T2DM) is a complex chronic disease; consequently, T2DM cost-effectiveness models are invariably complex. Despite efforts to validate these models and promote transparency it is often unclear to decision makers how these models map input settings to output results and which factors are most influential. Therefore, the objective of this study was to assess the relative impact of three key components of diabetes therapy on cost-effectiveness: changes in HbA1c, hypoglycemia and body mass index (BMI). **METHODS:** This study utilized the IMS CORE diabetes model (CDM) to model four profiles associated with managing type 2 diabetes; Treatment 1: -0.5% HbA1c; Treatment 2: -0.5% HbA1c and BMI -1 Kg/m^2; Treatment 3: -0.5% HbA1c, BMI -1 Kg/m^2 and 2 non-severe hypoglycemia (NSHE) avoided; Control: no effect. Lifetime analyses were conducted using NHANES to populate the patient characteristics in the modeling. Disutilities of -0.0052 and -0.0038 were applied to each NSHE and 1 unit increase in BMI respectively. Discounting was applied at 3% and US 2010 costs were used. **RESULTS:** Compared to Control (no effect), Treatments 1, 2 and 3 were associated with discounted gains in lifetime quality adjusted life expectancy (QALE) of 0.059, 0.119 and 0.241 respectively (0.091, 0.185 and 0.354 undiscounted). Each unit decrease in NSHE and BMI were associated with similar gains in QALE associated with a 0.5% HbA1c reduction. **CONCLUSIONS:** Within models of T2DM, the health utility gains associated with weight reduction and avoidance of NSHE are applied to all patients in a treatment arm; this is in contrast to changes in HbA1c that only impacts the probability of a future event (cardiovascular and/or micro-vascular). Consequently, therapies associated with the avoidance of weight gain and hypoglycaemia will likely exhibit favourable cost-effectiveness profiles compared to improvements in glycaemic control only.

PDB54

ASSESSING THE CONSISTENCY OF ABSOLUTE CARDIOVASCULAR RISK PREDICTION AND RELATIVE RISK REDUCTION IN TYPE-2 DIABETES MELLITUS

McEwan P[1], Lamotte M[2], Grant D[3], Palmer JL[4], Lloyd A[3], Foos V[5]

[1]*Swansea University, Cardiff, UK,* [2]*IMS Health, Vilvoorde, Belgium,* [3]*IMS Health, London, UK,* [4]*IMS Health, Allschwil, Basel-Landschaft, Switzerland,* [5]*IMS Health, Basel, Switzerland*

OBJECTIVES: Accurate estimation of baseline cardiovascular (CV) risk and relative risk reduction (RRR) is crucial to ensure that economic evaluations of new health technologies for the treatment of type 2 diabetes (T2DM) are robust. Many economic models (such as the CORE Diabetes Model) use risk equations (RE) derived from UKPDS and concerns persist regarding their validity; particularly as new equations are published. The objective of this study was to compare the consistency of predicted CV risk using RE derived from various T2DM populations. **METHODS:** All CV equations identified from a recent systematic review, derived from populations with T2DM, were coded and validated. Equations from Australia (Fremantle), New Zealand (DCS), Sweden (Cederholm), China (Yang), Scotland (DARTS), USA (ARIC) and UK (UKPDS) were included. Predicted 5-year CV risk was obtained using baseline cohort characteristics taken from ACCORD. Relative risk reductions (RRR) were obtained by applying a 10% relative reduction in HbA1c, total cholesterol and SBP both individually and in combination. **RESULTS:** Mean 5-year predicted risk of CVD was 11.0% (SE 1.9%); minimum of 3.4% (ARIC) and maximum 20.7% (DARTS). A 10% reduction in HbA1c, TC and SBP resulted in a mean RRR of 6.4%(SE 0.7%), 6.8% (SE 1.5%)and 9.8% (SE 2.3%) respectively. The DCS equation (New Zealand) predicted the lowest RRR for HbA1c, TC and SBP reduction (4.3%, 1.0% and 3.5% respectively). The highest RRR for HbA1c change was Cederholm (8.3%) and the DARTS equation for TC and SBP, 10.3% and 18.9%, respectively. **CONCLUSIONS:** The difference in absolute risk across these equations does not appear dependent on geographical location or study recruitment period. Generally, the UKPDS equations produced consistent absolute CV risk and RRR estimates close to the group averages; this is of reassurance given their widespread use. Health care policy decisions that rely on CV risk estimation should perform sensitivity analysis across multiple equations where practicable.

PDB55

DO EXISTING RISK EQUATIONS FAIL TO ADEQUATELY ACCOUNT FOR THE RELATIONSHIP BETWEEN BODY MASS INDEX AND MORTALITY IN SUBJECTS WITH TYPE-2 DIABETES?

McEwan P[1], Foos V[2], Grant D[3], Palmer JL[4], Lamotte M[5], Lloyd A[3]

[1]*Swansea University, Cardiff, UK,* [2]*IMS Health, Basel, Switzerland,* [3]*IMS Health, London, UK,* [4]*IMS Health, Allschwil, Basel-Landschaft, Switzerland,* [5]*IMS Health, Vilvoorde, Belgium*

OBJECTIVES: There is a substantial body of epidemiological evidence relating body-mass index (BMI) to increased risk of mortality in subjects with type-2 diabetes mellitus (T2DM). Cardiovascular (CV) and mortality risk equations typically incorporate the effects of elevated BMI via the inter-relationship between modifiable CV risk factors (cholesterol and systolic blood pressure) and BMI; this approach may underestimate true mortality risk. Therefore, the objective of this study was to assess by how much existing risk equations underestimate the risk of mortality as a function of increasing levels of BMI. **METHODS:** We projected life expectancy (LE) using the IMS CORE Diabetes Model (CDM), a validated and widely used simulation model designed to predict the health care costs and benefits associated with diabetes. Projected LE was obtained using patient level data (PLD) for subjects with T2DM from NHANES. CV and mortality risk was assessed using UKPDS risk equations and additional BMI cause specific mortality included via results from published prospective analyses